

REMARKS

Upon entry of this Response, claims 1-10, 12-34, 48-51 and 53-58 remain pending in the present patent application. Claims 3, 4, 13, and 53 have been amended and claims 59-68 have been added. Applicant requests reconsideration of the pending claims in view of the following remarks.

In item 2 of the Office Action, claims 1, 3-10, 13-34, 48-51, and 53-58 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. First, the Office action states the following:

It is not clear what relationship is defined by having the various sidewalls of tubes in the container by “substantially aligned” (claims 1, 8, 18 and 48).”

Applicants respectfully disagree. In particular, Applicants assert that one skilled in the art understands the meaning of the terms “substantially aligned” based upon the drawings and the discussion in the detailed description. In particular, FIG. 5 shows how the walls mate with the rods such that the rods are positioned within the recesses. When the corners are brought together, it is clear that the walls are brought into substantial alignment. The fact that the walls are aligned as such provides for larger tubes and correspondingly greater storage capacity. Also, the alignment of the side walls enables the distribution of the horizontal bearing load through the side walls to the container walls. In addition, in paragraph [0042] of the specification, the concept of substantial alignment is clearly described. Accordingly, Applicants request that the rejection of claims 1, 8, 18, and 48 with respect to this issue be withdrawn.

In addition, with respect to claim 28, the Office Action states:

... [T]he statement, “each of the tubes having a plurality of recesses along at least one of the corner and a plurality of flat load bearing surfaces along at least one corner” is ambiguous because it is not clear whether a single corner is intended to have both recesses *and* flat surfaces.

Applicants respectfully disagree that the above-cited language in claim 28 is ambiguous. Specifically, the tubes described in the present invention have corners, and recesses and flat surfaces may be located on the corners. It is possible that a given corner may include both recesses and load bearing surfaces, or it is possible that a corner only has recesses or load bearing surfaces. However, the language is broader than any one particular example where recesses or load bearing surfaces exist along at least one corner of the tube as set forth in claim 28. Applicants respectfully assert that one skilled in the art can appreciate the scope and meaning of such claim language and that it is not ambiguous. Furthermore, Applicants are within Applicants’ rights to claim the invention as seen fit, without unnecessary restriction to a limited embodiment for no apparent reason. Accordingly, Applicants request that the rejection of claim 28 under §112, second paragraph be withdrawn.

In addition, the Office Action further states:

It is not clear from the claims how the weld recited in claim 56 is positioned so as not to be subject to the horizontal bearing load because the weld is presumably coupling components that are subject to this load, and because the direction of the horizontal bearing load (claim 48) is also indefinite.

First, Applicants assert that one skilled in the art understands the meaning of a horizontal bearing load within the context of the description of the structure as set forth in the present specification and drawings. Specifically, the horizontal load is clearly the compressive load between the various tubes within the storage structure. Also,

Applicants note that the tubes are connected by extending pins through the openings in the first and second rods attached to respective ones of the tubes.

It is through this coupling that the horizontal bearing load is distributed among the respective tubes to the side walls of the container. According to one embodiment, the weld merely secures the pin to one of the first or second rods to hold the pin in the openings of the rods. Thus, in this embodiment, the weld is not subjected to the horizontal bearing load since the stress is placed upon the rods into which the pins are inserted. Applicants respectfully assert that one skilled in the art will understand the foregoing based upon a review of the present specification and the drawings. Accordingly, Applicants respectfully request that the rejection of claims 56 and 48 under § 112, second paragraph be withdrawn.

In addition, the Office Action rejects claim 7 under § 112, paragraph 2 stating as follows:

Regarding claim 7: as can be seen in FIG. 5, connection of rod 8, 12 with rod 20, 22 by pin could not connect flat bearing surfaces of corners 60 and 62 together as claimed in claim 7 and as shown in FIG. 9.

It is apparent that the Office Action assumes that the drawings of the present application depict precise relationships and dimensions with respect to the various principles illustrated. However, the drawings of the present patent application are merely illustrative of the various embodiments of the present invention and are not “working drawings” that define precise proportions of elements. In this respect, the drawings of FIG. 5 illustrate how the corners of the tubes can come together, where the rods fit within the recesses. It is further understood that the walls may appear thicker

such that flat surfaces along respective corners come into contact and so that rods fit into the recesses along the same corners.

In this respect, Applicants note that it has long been held that drawings which ordinarily accompany patent applications are merely illustrative of the principles embodied in the inventions claimed and do not define precise proportions of elements relied upon to endow the claims with patentability unless specified with particularity. *In re Olson*, 101 USPQ 401 (CCPA 1954); *In re Chitayat*, 161 USPQ 224 (CCPA 1969); *In re Wright*, 193 USPQ 332 (CCPA 1977). Applicants assert that the drawings of the present application are not working drawings that provide precise dimensions as the rejection in the Office Action appears to assume. Accordingly, Applicants respectfully request that the rejection of claim 7 be withdrawn.

Next, in item 3 of the Office Action, claims 3, 4, 5, 13, and 53 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite because of dependency on cancelled claims. Appropriate amendments have been made to these claims to correct the dependencies. Accordingly, Applicants request that the rejection of these claims be withdrawn.

Next, in item 5 of the Office Action, claims 1, 6, and 7 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over US Patent 6,009,136 issued to Loftis et al. (hereafter "*Loftis*") in view of a picture that is alleged to be a "wooden house." For the reasons that follow, Applicants respectfully assert that the rejection of claims 1, 6, and 7 is improper. Accordingly, Applicants request that the rejection of these claims be withdrawn.

To begin, claim 1 recites as follows:

1. A container for storing or transporting spent nuclear fuel, the container comprising:

a plurality of tubes that receive spent nuclear fuel assemblies, each tube having four sidewalls and four corners defining a rectangular cross section;

an attachment means for attaching respective pairs of a plurality of corners of the tubes to each other, at least one corner of a first one of the tubes engaging another corner of a second one of the tubes, the attachment means comprising a plurality of recesses in respective ones of the corners and a plurality of rods that are positioned in the recesses between respective engaged ones of the corners, wherein each of the rods is a cylinder having a single cylindrical wall, the cylindrical wall of each of the rods contacting at least two recesses associated with at least two of the tubes;

each engaged corner of the first and second ones of the tubes being formed from an intersection of a first sidewall and a second sidewall, the first and second side walls being normal to each other;

the first sidewall of the first one of the tubes and the first sidewall of the second one of the tubes being in substantial alignment; and

the second sidewall of the first one of the tubes and the second sidewall of the second one of the tubes being in substantial alignment.

With respect to claim 1, the Office Action alleges that *Loftis* shows various elements of claim 1 and also states in part:

Loftis does not necessarily teaches directly the limitations: “a plurality of recesses in respective ones of the corners” and “the cylindrical wall of each of the rods contacting at least two recesses associated with at least two of the tubes”.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view “wooden house” drawn to the side by side cylindrical rods connection, hence analogous art who teaches: inserting the cylinder into recesses and attaching of flat part of cylinder to flat part of cylinder used hundred of years for wooden houses assembling. It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners. An attachment means for attaching respective pairs of a plurality of corners of the tubes to each other in this claim is no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. Examiner takes

official notice that this type of structural connection is notoriously well known.

Office action, page 6.

Applicants respectfully disagree. First, Applicants note that the “wooden house” is actually a plastic play structure. The walls of the alleged wooden house are not constructed of wood but are contiguous walls that have a façade to look like logs. This can be seen by the slot and tab structure that holds the walls together at the corners. Nonetheless, this reference has been supplemented by language added by the Examiner which states:

“Wooden House. Examiner takes official notice that this type of wooden house assembling is known some hundred years. Attaching cylinders into recesses and attaching of a flat part of cylinder to a flat part of other cylinder is used several hundred of years for wooden houses assembling.”

Applicants respectfully traverse this rejection for several reasons. First, Applicants respectfully assert that the rejection based on the combination of *Loftis* and the plastic “wooden” house is improper as the structure of the plastic “wooden” house is non-analogous to the technology that is the subject of the present patent application. In particular, use of references in a rejection is improper if one of ordinary skill would not have reasonably consulted them and applied their teaching to seeking a solution to the problem addressed by the instant invention. *Heidelberger Druckmaschinen v. Hantscho Commercial Products*, 21 F3d 1068, 1071, 30 USPQ 2d 1377 (Fed. Cir. 1994). This speaks to the fact that the inventor cannot possibly be aware of every teaching in every art. Application of *Wood*, 599 F2d 1032, 1036, 202 USPQ 171 (CCPA 1979). In order to determine whether prior art is analogous, one must first ascertain if the reference falls within the field of the inventor’s endeavor. If the reference falls within the field of the

inventor's endeavor, then it is analogous. Otherwise, it is not analogous. *In re Oetiker*, 977 F.2d 1443 (Fed. Cir. 1992); *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *Application of Wood*, 599 F.2d 1032, 036, 202 USPQ 171 (CCPA 1979). Also, if a reference is reasonably pertinent to the particular problem addressed by the invention, then it can also be deemed analogous. *Application of Wood*, 599 F.2d 1032, 1036, 202 USPQ 171 (CCPA 1979).

Applicants respectfully assert that the plastic "wooden" house that is relied upon in combination with *Loftis* to effect the instant rejection of claims 1, 6, and 7 does not fall within the field of endeavor of the present patent application, nor is the plastic "wooden" house reasonably pertinent to the problems addressed by the various embodiments of the present invention. For that matter, Applicant also asserts that the structure of a real log cabin, if such a structure were actually depicted, also does not fall within the field of endeavor of the present patent application, nor is such a structure reasonably pertinent to the problems addressed by the various embodiments of the present invention.

The various embodiments of the present application are related to the field of containers for the transportation and storage of spent nuclear fuel. In the above excerpt, the Examiner has taken official notice of various concepts relative to the plastic "wooden" house or log cabins. However, it must be pointed out that there are many other issues that bear upon the problems addressed by the various embodiments of the present invention that are completely ignored by the Office Action.

Specifically, the Office Action appears to trivialize the inherent danger and difficulty in storing and transporting spent nuclear fuel. To this end, the containment systems used to store and transport spent nuclear fuel are designed with significant

engineering effort expended to ensure sturdiness and robustness in design and construction such that it is not reasonably possible, even under the most extreme circumstances, for spent nuclear fuel and the radioactive material associated therewith, to become geometrically unstable in the system's supporting basket structure or to breach the containment provided by the system. Generally, there is little disagreement that radiation from spent nuclear fuel is dangerous. In fact, many people would react with some concern to learn that spent nuclear fuel was being transported or stored near their home.

To ensure that spent nuclear fuel is properly contained, new designs for nuclear transport and storage containment are rigorously analyzed to ensure that they will adequately perform for the storage and transport of spent nuclear fuel. For example, as set forth in the Declaration of Charles W. Pennington submitted herewith under 37 CFR §1.132, such containers must be designed to withstand a drop from a height of 9 meters onto an essentially unyielding surface without substantial damage to ensure that the spent fuel geometry remains stable within the basket structure of the system and the integrity of the containment system is maintained when nuclear fuel is transported therein. To assure this, the designs for such containers must be analyzed using the most advanced dynamic analysis methods. This reflects the fact that such containers, when placed on trucks or railcars for movement between storage facilities, might actually be in an accident, *etc.*

Applicants respectfully assert that the design and/or construction of a log cabin (even a plastic one) does not fall within the field of nuclear spent fuel transport and storage containment. Also, such design is not reasonably pertinent to the problems

addressed by the design of nuclear transport and storage containment systems. Applicants assert that the principles behind the construction of the plastic “wooden” house or real log cabins are per se not within the field of invention of the present application. Also, the structure of log cabins, whether constructed from plastic or logs, is not reasonably pertinent to the problems faced by engineers when designing and analyzing nuclear fuel transport and storage containers.

That is to say that log cabins, whether made of logs or plastic, are constructed with much different concerns than those contemplated by engineers and designers who design and analyze containment systems for the transport and storage of spent nuclear fuel. As detailed in the accompanying Declaration of Charles W. Pennington, Applicants assert that the rigorous design requirements for containers for the storage and transportation of spent nuclear fuel reflect have vastly different and more complex considerations than those taken into account during the construction of log cabins, whether they be actual log cabins or plastic play houses.

For example, such containers must withstand rigorous structural requirements to ensure the geometric stability of the spent fuel and the integrity of the containment of spent nuclear fuel and the radioactive material associated therewith, despite the imposition of design-basis off-normal and accident conditions that could hypothetically occur during transportation and storage. Log cabins simply do not have such stringent design requirements. Also, containers designed for the storage of spent nuclear fuel are constructed with far more sophisticated and exotic materials, more advanced forming and shaping methods, more demanding testing, inspection, and acceptance protocols, and detailed assembly procedures and practices requiring much greater

precision with much tighter tolerances than log cabins. Simply put, the principles of log cabin construction are inapplicable and immaterial to the design, analysis, and construction of systems for the transport and storage of spent nuclear fuel. The very comparison to a log cabin is irrelevant in the consideration of the advanced technology represented in the present patent application.

Accordingly, Applicants respectfully assert that the plastic “wooden” house reference, or concepts relating to the construction of log cabins, as applied in combination with *Loftis* are not analogous to the present application. Accordingly, Applicants assert that the rejection is improper. Therefore, Applicants request that the rejection of claims 1, 6, and 7 be withdrawn.

In addition, when a rejection in an application is based on facts within the personal knowledge of an examiner, it should be as specific as possible. When called for by the applicant, the Examiner must support any assertion with an affidavit which is subject to contradiction or explanation by the affidavits or declarations of the applicant or other persons. 37 C.F.R. § 1.104(d)(2).

Applicants note that there are several facts cited by the Examiner in the instant Office Action to which the Applicant objects. First, the “wooden house” reference includes text by the Examiner relating to apparent design of log cabins. To this end, the “wooden house” reference states, “Wooden House. Examiner takes official notice that this type of wooden house assembling is known some hundred years. Attaching cylinders into recesses and attaching of a flat part of cylinder to a flat part of other cylinder is used several hundred of years for wooden houses assembling.” To ensure

that the integrity of the record is maintained for possible appeal, Applicants hereby request an affidavit from the part of the Examiner attesting to the facts alleged.

In addition, Applicants note that claims 1, 6, and 7 have been rejected based upon the Examiner's personal knowledge of a "commonplace hinge"... "having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewalls of one of the adjacent tubes." Applicant respectfully assert that it is apparent that the rejection of claims 1, 6, and 7 in this respect is necessarily based upon facts that are within the personal knowledge of the Examiner. Accordingly, Applicants respectfully request that for the completeness of the record and to better place this application in condition for potential appeal, that the Examiner provide an affidavit or declaration that supports the assertions made by the Examiner to this extent in the Office Action.

In view of the foregoing, in the absence of an appropriate affidavit attesting to the various facts alleged based upon the personal knowledge of the Examiner, Applicants once again respectfully request that the rejection of claims 1, 6, and 7 be withdrawn.

In addition, a prima facie case of obviousness is established only when the prior art teaches or suggests all of the elements of the claims. MPEP §2143.03, In re Rijckaert, 9 F.3d 1531, 28 U.S.P.Q2d 1955, 1956 (Fed. Cir. 1993). For the reasons that follow, Applicants assert that the cited combination of references of *Loftis* and the plastic "wooden" house fails to show or suggest each of the elements of each of claims 1, 6, and 7. In particular, the Office Action admits that *Loftis* does not teach the element of the "plurality of recesses in respective ones of the corners" and "the cylindrical wall of

each of the rods contacting at least two recesses associated with at least two of the tubes.” In order to make up for this deficiency, the Office Action states that:

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view “wooden house” drawn to the side by side cylindrical rods connection, hence analogous art who teaches: inserting the cylinder into recesses and attaching of flat part of cylinder to flat part of cylinder used hundred of years for wooden houses assembling. It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners. An attachment means for attaching respective pairs of a plurality of corners of the tubes to each other in this claim is no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. Examiner takes official notice that this type of structural connection is notoriously well known.

Applicants assert that it is not obvious to draw principles from log cabins or plastic “wooden” houses to be applied in the construction of nuclear containment systems as stated above. As set forth in the Declaration of Charles W. Pennington accompanying this response, the design for the transport and storage of spent nuclear fuel as set forth in claims 1, 6, and 7 runs contrary to the long accepted approach of using massive containment structures with extensive welding and rigid assembly for the basket design in storage and transport systems for spent nuclear fuel. Also, the looseness among the tubes and potentially weakened walls of the tubes at the recesses of the claimed design would lead one to believe that such a design would not work, as it would not meet the accident loading conditions required by Federal regulations for systems designed for the storage and transport of spent nuclear fuel.

Also, given the stringent requirements for such containment systems, Applicants assert that the concepts involved in constructing log cabins or plastic “wooden” houses

are not necessarily applicable to the construction of containment systems for the storage and transportation of spent nuclear fuels. Also, the “commonplace hinge” of a door or other structure is not relatively pertinent to the design, analysis, and construction of such containment systems. For example, it is not apparent or obvious at the outset whether such structures could successfully withstand the rigorous imposition of hypothetical accident loading conditions, as required by Federal regulations for such containment systems that transport and store spent fuel.

Accordingly, Applicants assert that the elements of claim 1, or claims 6 or 7 as depending from claim 1 are not obvious in view of the cited combination of Loftis and the plastic “wooden” house. For this additional reason, Applicants request that the rejection of claims 1, 6, and 7 be withdrawn.

Also, in the above quote excerpt, the Office Action specifically states:

An attachment means for attaching respective pairs of a plurality of corners of the tubes to each other in this claim is no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewalls of one of the adjacent tubes.

Statements like the one above trivialize the difficulties and problems inherent in the design of containers for the storage of spent nuclear fuel. Are the principles of commonplace hinges really applicable to containers used for the storage of spent nuclear fuel? Applicants respectfully assert that the facts attested to in the accompanying Declaration of Charles W. Pennington would indicate that such assumptions have no basis in reality. Also, the above statements in the Office Action virtually ignore the complex and stringent design requirements associated with the design of containers for the storage of spent nuclear fuel. Indeed, a “commonplace

hinge” may not withstand a strong wind, let alone the loads from hypothetical accident conditions imposed upon spent fuel transport and storage systems.

Also, the same statements are made with little or no appreciation of the general understanding in the field of what makes an appropriate structure for assuring the mechanical support and the maintenance of geometric stability for spent nuclear fuel in transport and storage systems. In a sense, the statement in the Office Action set forth above is made in isolation without a full understanding of the realities involved in the conceptualization, design, analysis, and manufacture of containers for the transport and storage of spent nuclear fuel at the time of invention of the various claimed embodiments.

As such, it is apparent that the above statement represents a classic case of the impermissible use of hindsight reconstruction to reject the claims of the present patent application. It is impermissible to use hindsight reconstruction to effect the rejection of claims in a patent application. Accordingly, for this additional reason, Applicants request that the rejection of claims 1, 6, and 7 be withdrawn.

In addition, Applicants respectfully object to the taking of official notice for the various types of structural connections to the extent that it is not clear precisely what facts for which official notice is taken. Is it merely the structure of the plastic “wooden” house, hinges, or the use of such concepts in the design of basket structures for the support and geometric stability within the containment systems for spent nuclear fuel? Accordingly, Applicants respectfully request that to the extent official notice is taken of anything in the present application, that it be clearly stated on the record. In addition, Applicants object to such official notices to the extent that they are based upon an

assumption that those who design containment systems for spent nuclear fuel automatically assume that the various structures mentioned in the Office Action such as log cabins or plastic “wooden” houses are taken into account in designing, analyzing, and constructing such containment systems.

Next, in item 6 of the Office action, claims 8-10, 13-34, 48-51, and 53-58 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over *Loftis* in view of US Patent 4,630,738 issued to Bosshard in view of an alleged “wooden house,” and further in view of US Patent Application Publication 2002/0015614 A1 filed by Lindsay (hereafter “*Lindsay*”), and further in view of a catalog by Hoover Fence Company as represented by an apparent web page attached to the Office action. A prima facie case of obviousness is established only when the prior art teaches or suggests all of the elements of the claims. MPEP §2143.03, In re Rijckaert, 9 F.3d 1531, 28 U.S.P.Q2d 1955, 1956 (Fed. Cir. 1993). Applicant respectfully requests that the rejection of these claims be withdrawn in view of the following remarks.

First, Applicants note that the catalog listing from the Hoover Fence Company as represented by a web page attached to the Office Action does not appear to have a date associated therewith by which one may make an appropriate determination as to whether the subject matter is in fact prior art with respect to the present patent application in accordance with 35 U.S.C. §102. Applicant points to 37 CFR §1.104(d)(1) which states “If printed publications are cited, the author (if any), title, date, pages or plates, and place of publication, or place where a copy can be found, will be given.” Since no date is cited, it cannot be ascertained as to whether the Hoover Fence catalog publication qualifies as prior art. Accordingly, Applicant respectfully requests that the

precise date of publication of the Hoover Fence catalog be provided, or the rejection of claims 8-10, 13-34, 48-51, and 53-58 be withdrawn.

In addition, claim 8 recites as follows:

8. A container for storing or transporting spent nuclear fuel, the container comprising:
a plurality of tubes that receive spent nuclear fuel;
a plurality of first rods being mounted at a point where each respective one of the tubes abuts against another one of the tubes, each of said first rods having an opening, wherein each respective one of the first rods is mounted in a recess of both a first one of the tubes and a second one of the tubes, wherein each of the rods is a cylinder having a single cylindrical wall, the cylindrical wall of each of the rods contacting the recesses of both the first and second ones of the tubes;
at least one pin;
wherein the openings of respective ones of the first rods mounted on the first one of the tubes are substantially aligned with the openings of respective ones of the first rods mounted on the second one of the tubes;
the at least one pin extends through the aligned ones of the openings of the first rods, thereby linking respective ones of the tubes together; and
wherein each one of the respective ones of the first rods mate with a corresponding recess in the second one of the tubes when the openings of the respective ones of the first rods mounted in the recesses in the first one of the tubes are substantially aligned with the openings of the respective ones of the first rods mounted on the second one of the tubes.

With respect to claim 8, the Office Action states in part:

Loftis does not necessarily teach directly the limitation “each of said first rods having an opening, wherein each respective one of the first rods is mounted in a recess of both a first one of the tubes and a second one of the tubes, at least one pin; wherein the openings of respective ones of the first rods mounted on the first one of the tubes are substantially aligned with the openings of respective ones of the first rods mounted on the second one of the tubes; the at least one pin extends through the aligned ones of the openings of the first rods, thereby linking respective ones of the tubes together; and wherein each one of the respective ones of the first rods mate with a corresponding recess in the second one of the tubes when the openings of the respective ones of the first rods mounted in the recesses in the first one of the tubes are substantially aligned with the openings of the respective ones of the first rods mounted on the second one of the tubes”.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include said limitation in view of admitted prior art Bosshard drawn to rack for storing nuclear fuel elements, hence analogous art who teach to "It has been known lugs in the form of hinges or pivots have been welded to the edges of square tubes in order to provide lateral support between the tubes. The lugs are connected by a pin which is inserted through the lugs." (Column 1, lines 7+). It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners as disclosed in "wooden house".

Office action, pages 7-8.

Applicants respectfully disagree. In particular, Applicants assert that it would not have been obvious to position the rods in the recesses as claimed, since one skilled in the art would likely presume that the depth of the recesses appear to present a weakness under compressive loading, owing to the thinning of the wall material of the tubes at a natural weak point at the corners, and that the pull-out forces from accident conditions imposed on the rods would remove them from the recesses, causing an unacceptable basket instability. (see Declaration of Charles Pennington)

In addition, as set forth in the accompanying Declaration of Charles Pennington, Bosshard teaches structures used for wet storage of spent nuclear fuel. Such structures are subject to much less stringent design-basis accident conditions imposed by Federal regulatory requirements than Type B spent fuel transport and storage containers that are the subject of the present application. These less stringent accident conditions for such wet storage systems would impose peak accelerations/decelerations of about 1g, which is 1/60th (less than 2%) of the design requirement for dry spent nuclear fuel storage and transport systems as set forth above in the present claims.

Accordingly, upon reading Bosshard, one skilled in the art will appreciate that the designs described by Bosshard are subject to such lower accident condition loadings and that such designs may not be adequate for the type of containers employed for dry spent nuclear storage and transport systems as set forth in the claims of the present application. In this respect, one skilled in the art would perceive that the systems described therein would not be used as the Office Action claims, given that such systems are never designed to withstand the forces resulting from 60g acceleration/deceleration accident conditions as required by Federal regulatory requirements for Type B spent fuel transport and storage systems. Thus, in this sense, the statements set forth above from the Office Action are made in isolation without a full appreciation of the full teachings of Bosshard.

Still further, the Office Action further states "Example of similar connection between corners of tubes is represented in catalog of Hoover Fence Co." Applicants respectfully assert that fence hinges as described in the Hoover Fence catalog, are constructed with much different concerns than those contemplated by engineers and designers who design and analyze containment systems for the transport and storage of spent nuclear fuel. Once again, Applicants assert that the rigorous design requirements for containers for the storage and transportation of spent nuclear fuel have vastly different and more complex considerations than those taken into account during the construction of fence hinges.

For example, such containers must withstand rigorous structural requirements to ensure the geometric stability of the spent fuel and the integrity of the containment of spent nuclear fuel and the radioactive material associated therewith, despite the

imposition of design-basis off-normal and accident conditions that could hypothetically occur during transportation and storage. Fence hinges simply do not have such stringent design requirements. Also, containers designed for the storage of spent nuclear fuel are constructed with far more sophisticated and exotic materials, more advanced forming and shaping methods, more demanding testing, inspection, and acceptance protocols, and detailed assembly procedures and practices requiring much greater precision with much tighter tolerances than fence hinges. Simply put, the principles employed in the design of the cited fence hinge are inapplicable and immaterial to the design, analysis, and construction of systems for the transport and storage of spent nuclear fuel. The very comparison to a fence hinge is irrelevant in the consideration of the advanced technology represented in the present patent application.

Accordingly, Applicants assert the rejection of claim 8 is improper. Therefore, Applicants request that the rejection of claim 8 be withdrawn. Also, Applicants request that the rejection of claims 18, 28, and 48 be withdrawn to the extent they incorporate subject matter similar in scope with that of claim 8. Further, Applicants request that the rejection of claims 9, 10, 13-17, 19-27, 29-34, 49-51, and 53-58 be withdrawn as depending from claims 8, 18, 28, or 48.

In addition, in rejecting claims 9, 10, 18, 19, 20, 21, 22, 29, 30, 34, 55, and 56, the Office Action relies on Bosshard for motivation to include various features and make various changes to the prior art stating:

... it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support of the tubes (column 1, lines 7+).

Applicants respectfully assert that this statement does not take into account the full teachings of Bosshard as understood by one of ordinary skill in the art. In particular, one of ordinary skill in the art would understand upon reading Bosshard that such systems were employed for wet storage of spent nuclear fuel and are not subject to the same hypothetical accident condition loadings as imposed by the more stringent Federal regulatory requirements for Type B containers. Thus, upon reading Bosshard, one would perceive that the structures described therein are not designed for the same demanding conditions and would conclude they would not be applicable to the claimed structures. Also, one skilled in the art would not know that such technology would work for the spent nuclear fuel transport and storage systems, given the need for the structural and mechanical engineering design and analysis effort needed to prove such designs. Accordingly, Applicants traverse the rejection of claims 9, 10, 18, 19, 20, 21, 22, 29, 30, 34, 55, and 56 over Bosshard respectfully request that such rejections be withdrawn.

In addition, it is noted that the Examiner has taken official notice of various subject matter or states that various subject matter is well known in effecting the instant rejection of several ones of the claims. However, in most all cases, the taking of official notice or assertion of well known facts fails to take into account the full teachings of the various references cited and the complexity of the design of spent nuclear storage and transport containers as described in the present application. Also, as stated above, when a rejection in an application is based on facts within the personal knowledge of an examiner, it should be as specific as possible. When called for by the applicant, the Examiner must support any assertion with an affidavit which is subject to contradiction

or explanation by the affidavits or declarations of the applicant or other persons. 37

C.F.R. § 1.104(d)(2).

With this in mind, with respect to claim 17, the Office Action states as follows:

On claim 17, the notoriously well known facts in mechanical art additionally teaches: the tubes includes a plurality of flat load bearing surfaces at the corners of the tubes, the plurality of flat load bearing surfaces on a respective one of the tubes engaging the flat bearing surfaces on a remaining one of the tubes.

It is well known from notoriously well known mechanical assembling use of plurality of flat load bearing surfaces at the convex corners of respective ones of the tubes, the flat load bearing surfaces on the first one of the tubes engaging the plurality of flat bearing surfaces on the second one of the tubes.

A flattening of convex surface improves precision and durability of assembling.

Office action, pages 10-11.

Applicants respectfully traverse the assertions with respect to what is well known in the mechanical art pertaining to the use of flat load bearing surfaces at the corners of tubes in the design and construction of dry spent nuclear fuel storage and transport systems. In particular, given the significant Federal regulatory requirements for the design and analysis of such systems and the significant structural and mechanical engineering effort needed to design and license such systems, Applicants assert that it is not notoriously well known to use flat load-bearing surfaces at the corners of tubes as set forth in the present application. In particular, the use of flat load-bearing surfaces is not particularly known to withstand the significant forces to which such containers may be subjected based upon the strict Federal regulatory requirements for design basis accident conditions. Also, the "looseness" between respective tubes that can allow pullout forces to introduce basket instabilities runs contrary to conventional approaches.

Thus, it is apparent that the assertions that such facts are “notoriously well known” are made in isolation without a full appreciation of the subject matter that is the subject of the present patent application. Accordingly, it is clear that such statements are made with the use of impermissible hindsight reconstruction using the claims of the present application as a blueprint. Therefore, Applicants respectfully request that the rejection of claim 17 be withdrawn for this additional reason. Also, Applicants request that the rejection of claim 27 be withdrawn for the same reasons to the extent applicable.

In addition, to the extent that any facts are stated as being “well known” without pointing to a specific reference in which those facts are recited, Applicants deem that such facts are actually the subject of the personal knowledge of the Examiner. Accordingly, Applicants hereby request an affidavit from the Examiner attesting to the existence of such facts as being notoriously well known as required by 37 C.F.R. §1.104(d)(2) set forth above.

In addition, with respect to claim 54, the Office Action states:

On claim 54, the notoriously well known facts in mechanical art additionally teaches: the recesses are formed in a plurality of corners in the outer surfaces of the tubes. It is obvious and very common in mechanical art to use such recesses for precise positioning and convenient connection of rods or cylinders to the convex cylindrical surfaces of corners.

Office action, page 22.

Applicants respectfully traverse the above statements given that the use of recesses formed in the plurality of corners of the outer surfaces of the tubes is not well known for the reasons described above. Accordingly, Applicants respectfully request that the rejection of claim 54 be withdrawn for this additional reason.

In addition, claims 59-68 have been added herein to further claim various embodiments. Allowance of claims 59-68 is respectfully requested.

CONCLUSION

It is requested that all outstanding objections and rejections be withdrawn and that this application and all presently pending claims be allowed to issue. If the Examiner has any questions or comments regarding this Response, the Examiner is encouraged to telephone the undersigned counsel of Applicants.

Respectfully submitted,

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